EPS Services

Overview of EUMETSAT Polar Services

2006 and beyond

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Presentation Overview

- **Overview of three levels of EPS disseminated services:**
  - **Metop Direct Readout Service (local reception)**
  - **EUMETSAT Advanced Retransmission Service (regional service)**
  - **EPS Global Products Service**
- **Overview of EPS Data Policy**

Introduction

- **EUMETSAT Polar System is the European component of a joint European/US polar satellite system.**
- **EUMETSAT plans to assume responsibility for the "morning" (local time) orbit and the NOAA will continue with the "afternoon" coverage.**
- **Planned launch date of the first Metop is April 2006 with two subsequent Metop satellites planned**
- **With two additional Metop satellites planned**

Metop Direct Readout Service

Metop-A payload:

- **AVHRR-3**
- **HIRS/4**
- **AMSU-A**
- **MHS**
- **IASI**
- **GRAS**
- **ASCAT**
- **GOME-2**

DCS-ARGOS relay antennas

S&R relay antennas

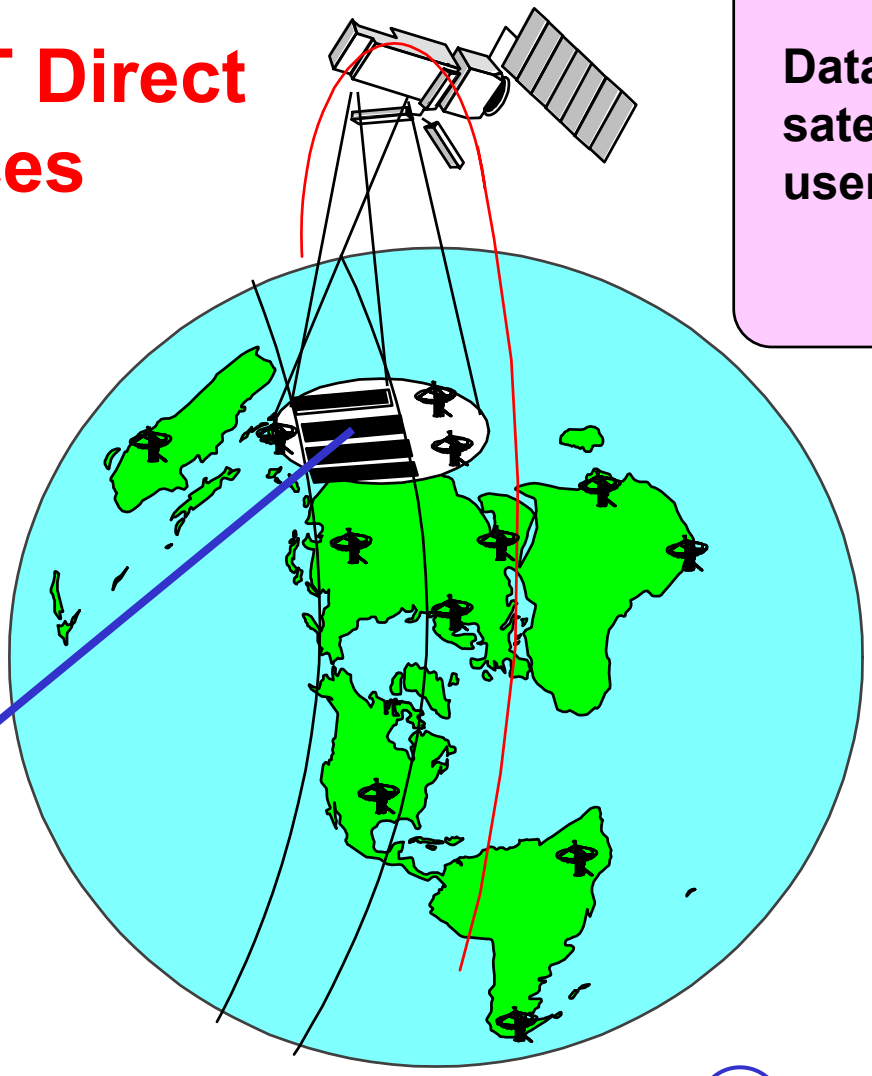
Metop Direct Readout Service

Delivery of data:

- **Instrument data readout in the form of**
  - **Advanced High Resolution Picture Transmission (AHRPT)**
  - **Low Resolution Picture Transmission (LRPT)**
- **Expected data rate of 3.5 Mbit/sec per second for AHRPT**
- **Recommended antenna size 2.4m tracking antenna**
- **Users operating existing HRPT stations would have to modify their stations in order to receive the "Advanced" Metop data**

Metop Direct Readout Service

AHRPT & LRPT Direct read-out services



Data source is the satellite from the user's point of view.

Data set limited to the observation of the instantaneous sub satellite observation.

Metop Direct Readout Service

AHRPT Service:

- transmission in the L - band :
  - 1701.3 MHz nominal
  - 1707.0 MHz backup
- data from all instruments at full resolution
- data rate up to 3.5 Mbit/sec
- local data coverage of a radius of up to 1500 km
- high quality transmission with Reed-Solomon coding

Metop Direct Readout Service

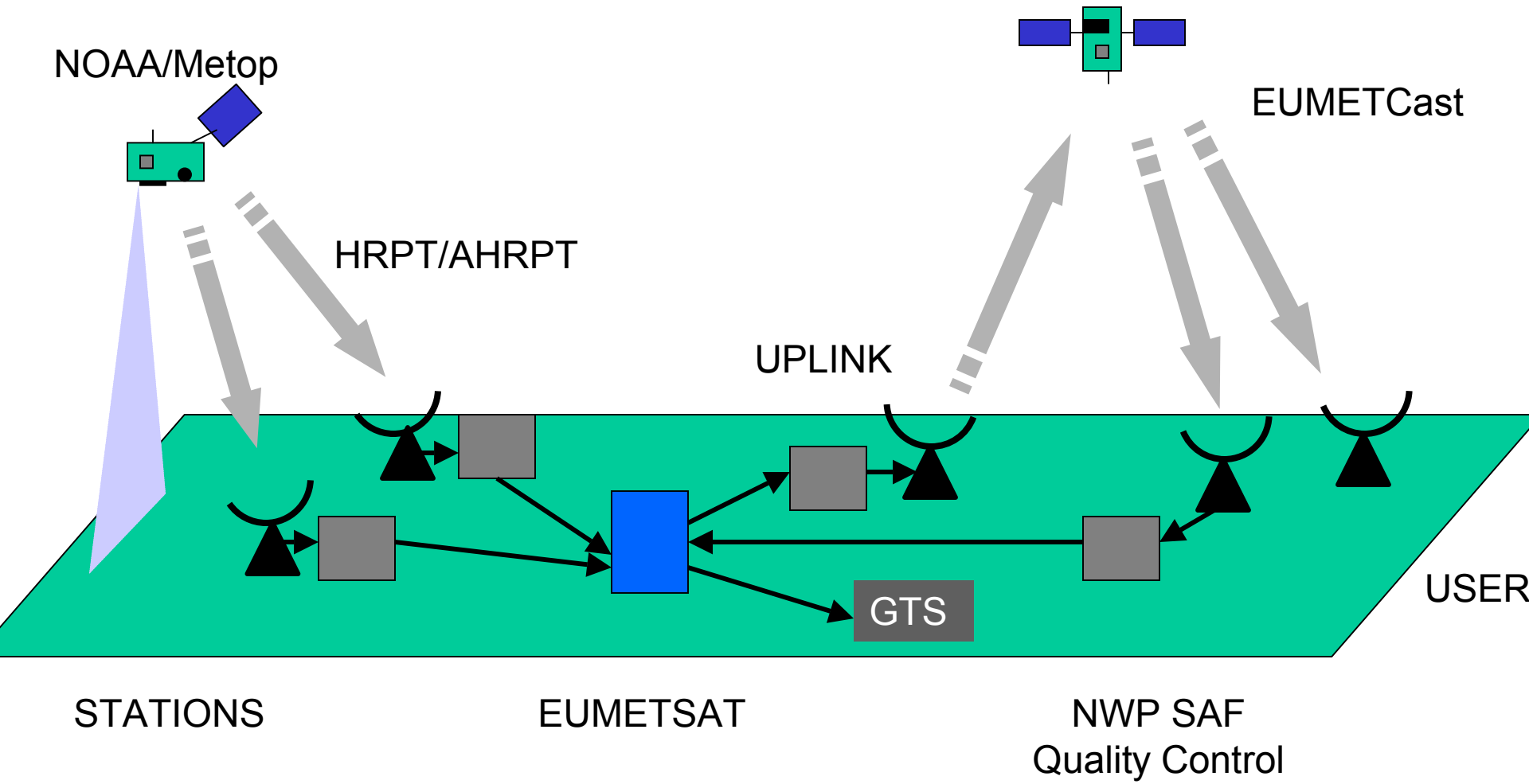
LRPT Service:

- transmission at 137.1 and 137.9 MHz
- reduced amount of digital data
  - 3 AVHRR channels JPEG compressed
  - at full horizontal resolution
  - all data from HIRS, AMSU and MHS
- data rate (packets) 72 Kbit /sec

EUMETSAT Advanced Retransmission Service - EARS

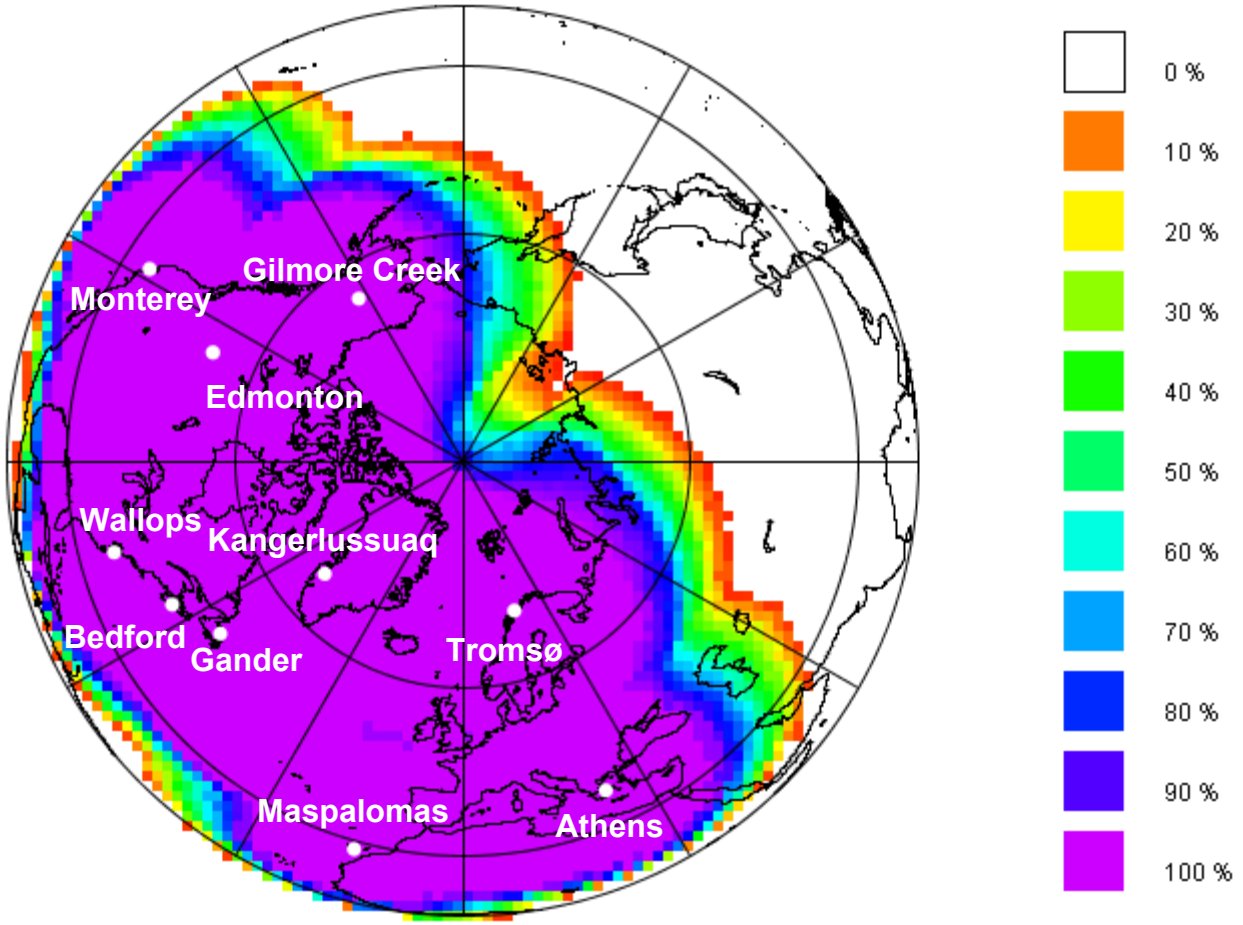
- **Aim of the EARS regional service is to:**
  - **timely retransmission suited to the needs of operational short-range regional numerical weather prediction models**
  - **large geographical coverage area**
  - **this is achieved by establishing a network of existing HRPT/AHRPT stations around the Atlantic and Arctic Oceans and rapid distribution of the collected instrument data to end users**
  - **Delivery of data to user via EUMETCast and GTS**
  - **Success due to the partner organisations involved**

EUMETSAT Advanced Retransmission Service - EARS



EUMETSAT Advanced Retransmission Service - EARS

HRPT Network Coverage by December 2003 :



EUMETSAT Advanced Retransmission Service - EARS

- **Current EARS (ATOVS) pilot phase runs until the end of this year**

- **EUMETSAT Council has approved:**
  - **Continuation of ATOVS Retransmission Service until end 2008**
  - **Proposed new Pilot ASCAT Retransmission Service**
  - **Proposed new Pilot AVHRR Retransmission Service**

EUMETSAT Advanced Retransmission Service - EARS

- **Long Term Goal: Northern Hemisphere Coverage**
  - **Additional stations in Russia (Moscow) and Oman foreseen**
- **NOAA NN' and Metop satellite data**
- **Metop AHRPT data stream for Core European Coverage for initial Metop operations, expanding with time**
- **Simplify and standardise set of products e.g. level 1C in BUFR**

EUMETSAT Advanced Retransmission Service - EARS

Pilot ASCAT Retransmission Service:

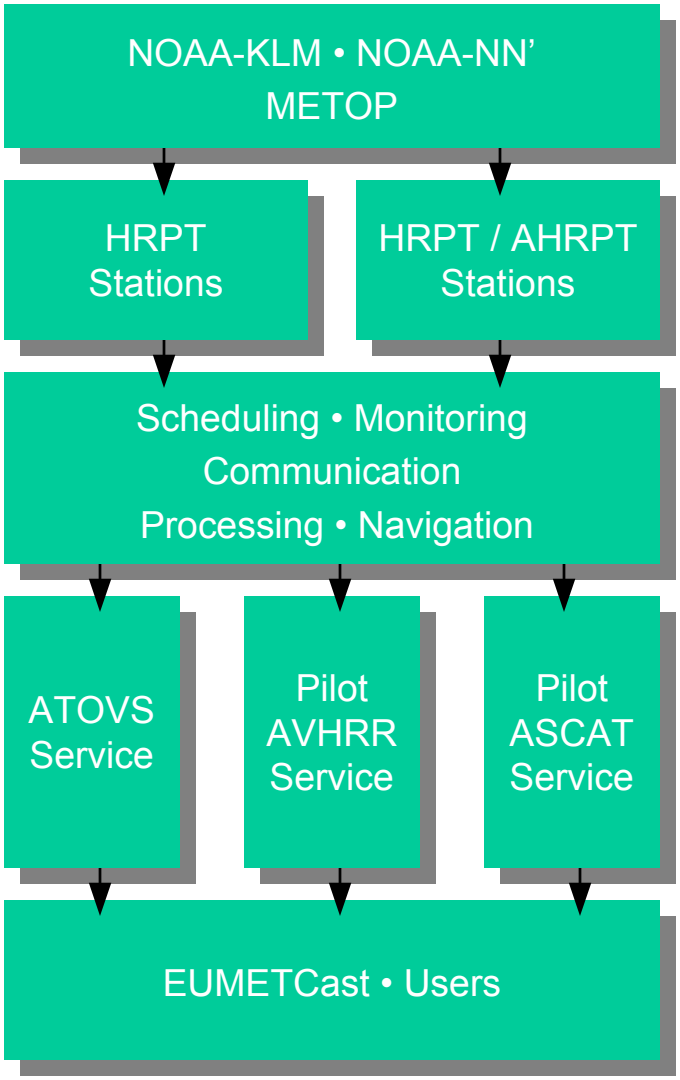
- User community and timeliness requirements similar to ATOVS Retransmission Service
- Timeliness 30 minutes
- Core European coverage by start of Metop operations, further Atlantic Ocean coverage to be targeted

Pilot AVHRR Retransmission Service:

- Comparable to the 3-station networks run by NOAA and the Meteorological Service of Canada
- Timeliness initially 30 minutes, targeting 15 minutes

EUMETSAT Advanced Retransmission Service - EARS

ATOVS, AVHRR and ASCAT Retransmission Services



EUMETSAT Advanced Retransmission Service - EARS

NOAA KLM, NOAA N-N' and Metop

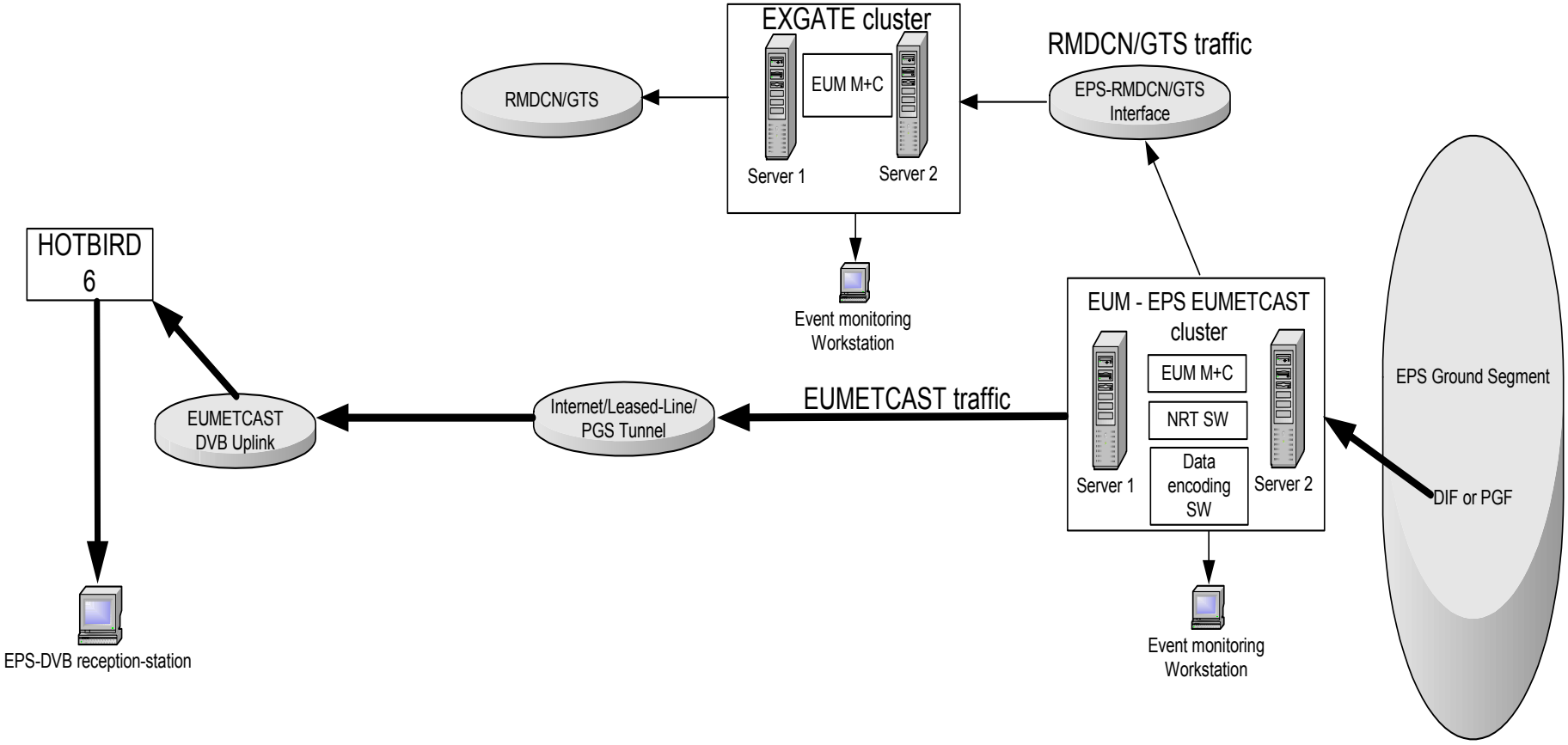
	Polar Satellite Generation			
	NOAA KLM	NOAA N-N'	Metop	
A/HRPT Data rate	665.4 Kbps	665.4 Kbps	3.5 Mbps	Instrument Data Rate
Launch Years	1998, 2000, 2002	2005, 2008	2006, 2010, 2015	
Imaging Radiometer	AVHRR/3	AVHRR/3	AVHRR/3	622 kb/s
Sounders Instruments	HIRS/3	HIRS/4	HIRS/4	2,9 kb/s
	AMSU-A	AMSU-A	AMSU-A	3,2 kb/s
	AMSU-B	MHS	MHS	3,9 kb/s
			IASI	1500 kb/s
Other Instruments			ASCAT	60 kb/s
			GRAS	60 kb/s
			GOME	400 kb/s

EPS Global Products Service

- **Global Products Service foreseen for the European user community:**
  - **Level 1 processed products**
  - **Level 2 processed products (EUMETSAT & SAFs)**
- **Delivery mechanism will be via EUMETCast**
  - **replaces the original Near Real-Time terminals for European user community**
  - **data delivery rate of 8 Mbit/sec**
- **Sub-set of products available via the GTS**
- **NOAA will have access via a terrestrial link**

EPS Global Products Service

Data Pick-Up Point within the EPS Ground Segment



EPS Global Products Service

Changes to Global Product formats:

	EUMETCast		GTS	
	Level 1	Level 2	Level 1	Level 2
ASCAT	BUFR and PFS	BUFR from SAF	BUFR	BUFR from SAF
ATOVS	BUFR	BUFR	BUFR	BUFR
AVHRR	PFS	-	-	-
GOME	BUFR and PFS	BUFR from SAF	-	BUFR from SAF
GRAS	BUFR and PFS	BUFR from SAF	-	BUFR from SAF
IASI	BUFR	BUFR	BUFR	BUFR

EPS Global Products Service

EPS/EUMETCast Dissemination Workshop:
9 & 10 February 2005

- **to discuss data delivery via EUMETCast**
- **existing EPS test tools**
- **involves manufacturers and prime users**

- **EUMETSAT Web pages contain:**
  - **Test Data**
  - **Test Tools**
  - **Local reception station design documentation**
  - **Product format guides**

  - **www.eumetsat.de**

Overview of EPS Data Policy

- **Metop Direct Readout Service - nominal operations classified as “essential” - without licence, without charge and without encryption**
  - **encryption would only be introduced in crisis situations**
- **Regional Service - essential**
- **Global Products:**
  - **Level 1 - TBC - expected to be essential**
  - **Level 2 - essential**
  - **If access control is required, this would be via a EUMETCast Key Unit (EKU)**